UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

MEMORANDM

SUBJECT: Request for a Time-Critical Removal Action at Fruitland Magnesium Fire Incident, Maywood, Los Angeles County, CA

FROM: Jason Musante, On-Scene Coordinator
Emergency Response Section (SFD-9-2)

TO: Enrique Manzanilla, Director
Superfund Division

THROUGH: Harry Allen, Chief
Emergency Response Section (SFD-9-2)

I. PURPOSE

The purpose of this Action Memorandum is to obtain approval to spend up to $1,620,000 in direct extramural costs to mitigate threats to human health and the environment posed by uncontrolled hazardous substances (namely chromium, zinc, and copper) and magnesium (a CERCLA pollutant and contaminant) in ash and debris associated with a fire-damaged industrial property. The contaminated ash migrated to adjoining residences and in some cases penetrated doors and windows.

On June 16, 2016, the EPA On-Scene Coordinator (OSC) exercised delegated procurement authority to begin emergency stabilization and response actions. The actions proposed in this document will allow transition from on-going emergency removal and stabilization activities into necessary time-critical removal actions.

The Site is located at 3570 Fruitland Avenue, Maywood, CA. The proposed removal of hazardous substances would be taken pursuant to Section 104(a)(1) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9604(a)(1), and Section 300.415 of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. § 300.415.

II. SITE CONDITIONS AND BACKGROUND

Site Status: Non-NPL
Category of Removal: Time-Critical
CERCLIS ID: CAN000903494

SITE ID: A9AP

A. Site Description

1. Physical location

The Fruitland Magnesium Fire Incident (the "Site") is located at 3570 Fruitland Avenue, Maywood, Los Angeles County, CA (Latitude: 33.9961640/Longitude: -118.2011630). On the southern fence line of the Site is a residential neighborhood consisting of single family homes and apartment complexes. Light industry surrounds the Site in the other cardinal directions. See Figure 1 for a Site Location Map.

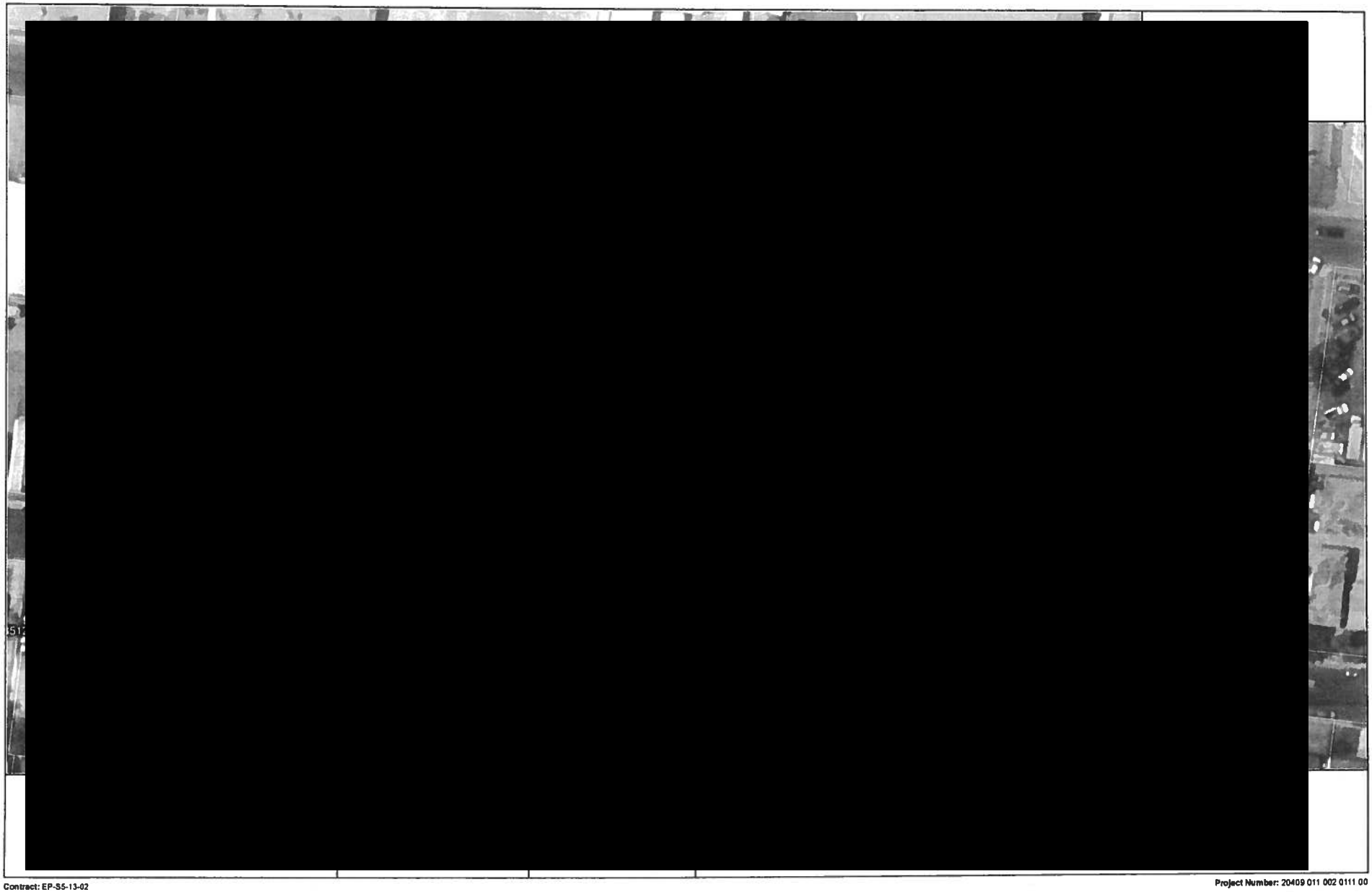
On June 14, 2016, at approximately 0200 hours, a fire started at the Panda International Trading Company (PIT). The fire at the PIT facility spread to the SOKOR Metals Company, both of which are located at 3570 Fruitland Ave. PIT collected and processed scrap metal and transported it out in bulk for recovery. SOKOR is a precious metals recovery operation that recovers precious metals from circuit boards and other electronics. Both facilities were heavily damaged in the fire and it is not known when or if they will resume operations.

It is estimated that approximately 10,000 pounds of magnesium were stored on the PIT facility at the time of the fire. On the morning of June 14, 2016, during firefighting operations, the magnesium exploded twice, showering the surrounding area with chunks of burning magnesium. Due to the hazards associated with fighting the fire, the Los Angeles County Fire Department (LACoFD) adopted a defensive firefighting mode allowing the fire to burn. EPA assistance was requested by LACoFD Health Hazmat initially to provide air surveillance. On June 16, 2016, the fire was ultimately extinguished and the Site was formally referred to EPA by LACoFD Health Hazmat and OSC Wise initiated a CERCLA removal action using his delegated procurement authority. A separate Emergency Response Action Memorandum documents the initiation of the emergency removal action.

2. Site characteristics

Initially, all residences on [redacted] (both sides of the street) were evacuated. The evacuation order for the [redacted] was lifted on June 18, 2016. Homes on the north side of [redacted], consisting of seventeen (17) parcels with a total of forty-three (43) residences, remain evacuated. These residences consist of mostly single family homes but include one 5-unit and one 10-unit apartment complex. A subset of these north side buildings were initially covered with ash, and ash appeared to penetrate windows and doors in a small number of the residences. Ash also appeared on grass, trees, on hard surfaces and in yards adjacent to the fire site.

On June 18, 2016, the Unified Command (UC) determined that evacuated residences should be cleaned. EPA crews initially vacuumed up outdoor visible ash with a "Supersucker." EPA's Emergency and Rapid Response Services (ERRS) contractor then cleaned portions of the street on [redacted], Fruitland Ave, [redacted]



[redacted] and [redacted]. Outside building surfaces and parked cars were also sprayed by a fire engine with water which was subsequently collected. The UC provided a car wash voucher for anyone whose car was deconned to obtain a more thorough cleaning.

3. Removal site evaluation

On June 16, 2016, while the fire was burning, EPA dispatched the START contractor and directed the collection of air samples and ash profile samples. Relevant Contaminants of Concern (COCs) were detected in both media. Selected data are provided in Attachment B. Characterization of these contaminants in ash and in indoor air is ongoing pending completion of indoor and outdoor decontamination activities.

4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

EPA's removal assessment documented the presence of hazardous substances including heavy metals (chromium, copper, zinc & magnesium) in ash and debris on Site. During the fire, ash was liberated from the Site and deposited on buildings, cars, residential yards and the street and sidewalk. In some cases, ash penetrated residences. The facility itself sustained heavy damage and ash may continue to migrate onto surrounding residences, the street, the sewer system and ultimately the greater watershed. Laboratory analytical data has confirmed the presence of California hazardous waste for the toxicity characteristic (copper & zinc). Such hazardous wastes are "hazardous substances" as defined by Section 101(14) of CERCLA.

Waste profiling has confirmed that the ash exceeds California hazardous waste thresholds. Four (4) ash samples were collected and analyzed for total metals (EPA method 6010B), volatile organic compounds (VOCs EPA method 8260B), and semi-volatile organic compounds (SVOCs EPA method 8270B). Heavy metals were detected including chromium (maximum 108 mg/Kg), copper (4,590 mg/Kg), and zinc (9,010 mg/Kg); copper and zinc exceeded respective California Total Threshold Limit Concentration (TTLC) levels. Magnesium is not a regulated hazardous substance or waste but was detected at as much as 429,000 mg/Kg or approximately 43% by weight.

Outdoor air sampling was conducted on June 16, 2016, while the fire was still burning. Sixteen samples were collected upwind, crosswind and downwind of the fire. Filter cassettes were analyzed using NIOSH method 7303M. Nine (9) samples contained chromium (0.323-8.76 ug/m^3), 2 samples contained copper (7.27-13.5 ug/m^3), 4 contained zinc (0.307-6.25 ug/m^3), and all contained magnesium (0.386-7.91 ug/m^3). Post-fire outdoor air sampling conducted on June 23, 2016, showed trace concentrations of magnesium in 2 samples (0.467 & 0.626 ug/m^3) while other COCs were non-detect (detection limit of 0.25 ug/m^3).

To ensure residences are safe for re-occupancy, the UC established an Action Level Working Group. The group included representatives from EPA, the Agency for Toxic Substances and Disease Registry (ATSDR) and LA County Public Health. All

agreed to establish an action level for indoor air for chromium as a COC. An action level of 0.5 ug/m^3 total chromium in air was established. Further, to ensure adequate protectiveness, the working group proposed additional sampling, using a micro-vacuuming technique, to estimate ingestion pathway exposures. Action levels for these sampling efforts are currently under development.

5. National Priorities List ("NPL") status

The Site is not currently on or proposed for inclusion on the NPL.

B. Other Actions to Date

Response operations continue at the Site with EPA in UC along with LA County agencies. On June 16, 2016, LA County Health Hazmat requested EPA's assistance in mitigation of the hazardous substances on-site.

C. State and Local Authorities' Roles

1. State and local actions to date

LA County Fire, Public Health Department, and Health Hazmat have all participated in the UC for the Incident. The Site remains under a UC structure currently with representation from County Public Health, Health Hazmat and EPA. In earlier operational periods, CA Department of Toxic Substances Control (DTSC) also participated in the UC. DTSC had arranged for disposal of contaminated firefighting and rinse water. LA County Fire and Public Health each, in turn, have provided relocation support. Currently, LA County Health is paying relocation expenses for approximately 200 residents at a local hotel.

2. Potential for Continued State/Local Response

While support is still being provided by these agencies, neither State nor local agencies have presented the resources to undertake the required waste removal at this time. Representatives from State and local response organizations will continue to assist and coordinate with EPA in various tasks including data review, planning and community relations.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Conditions at the Site exist which may pose an imminent and substantial endangerment to public health, and/or welfare, or the environment based on the factors set forth in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. § 300.415(b)(2). These factors include:

1. **Actual or potential exposure to nearby populations, animals or the food chain from hazardous substances or pollutants or contaminants**

There is an actual or potential exposure to nearby populations from hazardous substances at the Site. Ash containing heavy metals, at relatively low concentrations, has been deposited on residential yards and structures and penetrated windows and doors in some structures. Ash throughout the burn area also has not been fully stabilized or mitigated. The heavy metals, chromium, copper, and zinc are the primary hazardous constituents for this Site. Copper and zinc were detected above the CA TTLC regulatory limit in the ash. It is also possible that the ash waste contains dioxin/furans; however, definitive results are not yet available. Magnesium was also detected in the ash. Magnesium is a CERCLA pollutant or contaminant and not a regulated hazardous substance; however, it is a flammable solid and therefore a COC.

Any person entering the fire damaged areas may be exposed to hazardous substances by direct contact with contaminated ash and debris. Nearby populations may be exposed to hazardous substances via direct contact and inhalation. Air sampling data collected by EPA and EPA contractors have documented the presence of airborne hazardous substances in trace amounts.

Breathing high levels of chromium (VI) can cause irritation to the lining of the nose, nose ulcers, runny nose, and breathing problems, such as asthma, cough, shortness of breath, or wheezing. The concentrations of chromium in air that can cause these effects may be different for different types of chromium compounds, with effects occurring at much lower concentrations for chromium (VI) compared to chromium (III). Skin contact with certain chromium (VI) compounds can cause skin ulcers. Some people are extremely sensitive to chromium (VI) or chromium (III). Allergic reactions consisting of severe redness and swelling of the skin have been noted. Chromium (VI) is a known human carcinogen and can result in lung cancer at high concentrations. Chromium is a hazardous substance listed pursuant to 40 CFR 302 and a California toxic waste.

Copper is an eco-toxic metal. Breathing high levels of copper can cause irritation of nose and throat. Ingesting high levels of copper can cause nausea, vomiting, and diarrhea. Very high doses of copper can cause damage to the liver and kidneys, and can even cause death. Copper is a hazardous substance listed pursuant to 40 CFR 302. Copper is a California toxic waste.

Zinc is a toxic metal. Inhalation of metal zinc fumes can result in the exhibiting of throat dryness, cough, aches, chills, fever, nausea and vomiting. Exposure can also cause injury to mucous membranes and skin. Zinc is a hazardous substance listed pursuant to 40 CFR 302. Zinc is a California toxic waste.

Other hazardous substances or pollutants and contaminants not discovered to date or not specifically identified herein may exist at the Site. These substances may also pose a threat to human health and the environment.

2. High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate

Sampling results have documented the presence of heavy metals in the burn ash and in air samples collected while the fire was burning. See Section II for a description of the hazardous substances present and their respective concentrations.

3. Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released

Rain and/or winds may result in the off-site migration of contaminated soil and ash into surrounding residential properties, the street, storm sewers and the larger watershed.

4. Availability of other appropriate federal or state response mechanisms to respond to the release

LA County Health Department and CA DTSC have requested EPA assistance due to the size and scope of the impacted area.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances, pollutants, and contaminants from this Site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed action description

EPA proposes to characterize and remove hazardous substances at the Site and nearby residences to ensure residences are safe for re-occupancy and that further off-site migration of ash is minimized. Much of the on-site waste consists of ash fall-out from the fire and explosions. All wastes will be characterized using EPA-approved methodologies and delivered to an approved waste receiving facility. Analytical data obtained during the removal site evaluation is expected to be sufficient for the final profiling and acceptance of the waste at a permitted off-site facility; however, additional analytical data may be generated depending on facility-specific profile requirements.

The following actions are proposed:

- Continued removal residual ash from the street (Fruitland Ave and [redacted], and segments of [redacted] and [redacted]);
- Assessment of the evacuated homes using "activity-based" air sampling for heavy metals;
- Decontamination of interior and exterior of evacuated homes ([redacted] between [redacted] and [redacted]);
- Removal of ash from yards of evacuated homes;
- Fencing, stabilization and mitigation of ash from within the burn area.

All activities will be performed in conformance with prescribed health and safety procedures. Sampling and analysis activities will conform to EPA-approved methodologies and mandatory specifications for quality assurance and quality control. There are no identified areas of leaks or spillage. Any such areas that may be identified during the removal action will be addressed.

2. Contribution to remedial performance

EPA does not anticipate a long term remedial action at this Site. This removal action should remove all immediate threats posed by uncontrolled hazardous substances at the Site.

The long-term cleanup plan for the Site:

Final reporting of this removal action will be provided to Los Angeles County Environmental Health for consideration in any further activities under state or county programs.

Threats that will require attention prior to the start of a long-term cleanup:

The immediate threats that have been identified in the Action Memorandum will be addressed by the proposed removal action.

The extent to which the removal will ensure that threats are adequately abated:

The removal of abandoned and above ground hazardous substances is expected to abate the immediate threats from the Site.

Consistency with the long-term remedy:

As stated above, removal activities undertaken in this action will be considered and incorporated into state and county facility closure proceedings.

Post Removal Site Control:

The elimination of all threats identified for this removal action is expected to eliminate the need for post-removal Site control.

3. Applicable or relevant and appropriate requirements ("ARARs")

Section 300.415(j) of the NCP provides that removal actions must attain ARARs to the extent practicable, considering the exigencies of the situation.

Section 300.5 of the NCP defines applicable requirements as cleanup standards, standards of control, and other substantive environmental protection requirements, criteria or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location or other circumstances at a CERCLA site.

Section 300.5 of the NCP defines relevant and appropriate requirements as cleanup standards, standards of control and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, or contaminant, remedial action, location, or other circumstances at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site and are well-suited to the particular Site.

Because CERCLA on-site response actions do not require permitting, only substantive requirements are considered as possible ARARs. Administrative requirements such as approval of, or consultation with administrative bodies, issuance of permits, documentation, reporting, record keeping and enforcement are not ARARs for the CERCLA response actions confined to the Site.

The following ARARs have been identified for the proposed response action. All can be attained.

Federal ARARs: Potential federal ARARs are the RCRA Land Disposal Restrictions, 40 C.F.R. Part 268, Subpart D; the CERCLA Off-Site Disposal Restrictions, and the U.S. Department of Transportation of Hazardous Materials Regulations, 49 C.F.R. Part 171, 172 and 173.

State ARARs: Potential state ARARs are Characteristics of Hazardous Waste implemented through the California Health and Safety Code, Title 22, § 66261.20, § 66261.21, § 66261.22, § 66261.23, § 66261.24.

4. Project schedule

The removal action began as an emergency under the OSC Wise's delegated procurement authority. The first phase of work is expected to continue through July 2016. Work to remove all wastes from the facility property may be covered by an action memo amendment.

B. Estimated Costs

Regional Removal Allowance Costs

Cleanup Contractor	$	700,000
START Contractor	$	500,000
ERT/PST	$	150,000
Extramural Subtotal	$	1,350,000
Extramural Contingency (20%)	$	270,000
TOTAL, Removal Action Project Ceiling	$	1,620,000

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Given the Site conditions, the nature of the hazardous substances documented on-site and the potential exposure pathways to nearby populations described in Sections II, III and IV above, actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response actions selected in this Action Memorandum, present an imminent and substantial endangerment to public health, or welfare, or the environment.

VII. OUTSTANDING POLICY ISSUES

There are no outstanding policy issues with the Site identified at this time.

VIII. ENFORCEMENT

Please see the attached Confidential Enforcement Addendum for a discussion regarding potentially liable parties and enforcement. In addition to the extramural costs estimated for the proposed action, a cost recovery enforcement action also may recover the following intramural costs:

Intramural Costs[1]

U.S. EPA Direct Costs	$	60,000
U.S. EPA Indirect Costs (56.51% of $1,620,000+60,000)	$	949,368
TOTAL Intramural Costs	$	1,009,368

[1] Direct costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual costs from this estimate will affect the United States' right to cost recovery

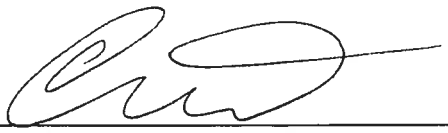
($1,620,000+$60,000) + (56.51% of $1,620,000+60,000) = $2,629,368

The total EPA extramural and intramural costs for this removal action, based on full-cost accounting practices that will be eligible for cost recovery, are estimated to be $2,629,368. Of this, an estimated $1,620,000 comes from the Regional removal allowance.

IX. RECOMMENDATION

This decision document represents the selected removal action for the Fruitland Magnesium Fire Incident, Los Angeles County, California, as developed in accordance with CERCLA and not inconsistent with the NCP. This decision is based on the Administrative Record for the Site.

Because conditions at the Site meet the NCP criteria for a time-critical removal, I recommend that you concur on the determination of imminent and substantial endangerment and the removal action proposed in this Action Memorandum. The total removal action project ceiling if approved will be $2,629,368 of which $1,620,000 comes from the Regional removal allowance. You may indicate your decision by signing below.

Approve:  7/1/16

Enrique Manzanilla, Director Date
Superfund Division

Disapprove: _____

Enrique Manzanilla, Director Date
Superfund Division

Enforcement Addendum

Attachment A: Index to the Administrative Record
Attachment B: Selected Data Tables

cc: Jean Schuman, USEPA, OEM, HQ

bcc: Site File
Michelle Rogow, SFD-9-2
Craig Whitenack, C
Madeline Gallo, ORC
Rebekah Reynolds, ORC
Celeste Temple, SFD-9-4

Confidential Enforcement Addendum

Attachment A: Index to the Administrative Record

1. Metals - Soil Sampling Analytical Results, June, 2016 Fruitland Magnesium Incident (AKA "Ash sampling data") (DRAFT)
2. Metals - Air Sampling Analytical Results, outdoor air sample data June 2016, Fruitland Magnesium Incident (DRAFT)
1. ATSDR ToxFAQ for Chromium. CAS#:7440-47-3. September 2008.
2. ATSDR ToxFAQ for Copper. CAS#:7440-50-8. Mach 2011.
3. ATSDR ToxFAQ for Zinc. CAS#:7440-66-6. March 2011.

Attachment B: Selected Data Tables

Metals - Soil Sampling Analytical Results (Unvalidated)
June, 2016
Fruitland Magnesium Incident
TDD: 02-1606001 / Site ID: A9AP

DRAFT - Do Not Distribute

				mwf-ash-001	mwf-ash-002	mwf-ash-003	mwf-ash-004
	Analyte	Method	Units	Result	Result	Result	Result
Metals	Antimony	EPA 6010B	mg/kg	11.3	68.6	44.5	11.9
	Arsenic	EPA 6010B	mg/kg	ND	ND	ND	ND
	Barium	EPA 6010B	mg/kg	7210	2380	23.5	2790
	Beryllium	EPA 6010B	mg/kg	0.406	ND	ND	1.31
	Cadmium	EPA 6010B	mg/kg	1.78	8.03	1.46	3.72
	Chromium	EPA 6010B	mg/kg	86.1	31.8	108	46.3
	Cobalt	EPA 6010B	mg/kg	5.44	4.24	1.97	6.27
	Copper	EPA 6010B	mg/kg	4090	2820	758	4590
	Lead	EPA 6010B	mg/kg	63.7	460	88.1	186
	Nickel	EPA 6010B	mg/kg	111	41.6	23.6	62.8
	Selenium	EPA 6010B	mg/kg	ND	ND	ND	ND
	Silver	EPA 6010B	mg/kg	47.3	23.9	ND	23.1
	Thallium	EPA 6010B	mg/kg	ND	ND	1.51	ND
	Vanadium	EPA 6010B	mg/kg	11.3	4.4	27.8	18.8
	Aluminum	EPA 6010B	mg/kg	22400	11400	229000	17300
	Calcium	EPA 6010B	mg/kg	8310	5920	1400	10200
	Iron	EPA 6010B	mg/kg	16000	38700	1960	16300
	Manganese	EPA 6010B	mg/kg	1090	974	141	806
	Potassium	EPA 6010B	mg/kg	159	303	159	1850
	Sodium	EPA 6010B	mg/kg	205	192	321	368
	Zinc	EPA 6010B	mg/kg	1060	9010	842	1450
	Magnesium	EPA 6010B	mg/kg	429000	230000	3660	206000
VOCs	benzene	EPA 8260B	ug/kg	ND	ND	5600	ND
	ethylbenzene	EPA 8260B	ug/kg	ND	ND	1500	ND
	naphthalene	EPA 8260B	ug/kg	ND	ND	19000	ND
	styrene	EPA 8260B	ug/kg	ND	ND	61000	10
	toluene	EPA 8260B	ug/kg	ND	ND	2500	ND
SVOCs	2-ethylhexyl) phthalate	EPA 8270C	mg/kg	0.52	ND	8.7	2
	phenol	EPA 8270C	mg/kg	ND	9.2	5.3	1.5
	acenaphthene	EPA 8270C	mg/kg	ND	ND	2.9	ND
	acenaphthylene	EPA 8270C	mg/kg	ND	ND	8.6	ND
	anthracene	EPA 8270C	mg/kg	ND	ND	6.6	ND
	benzo (a) pyrene	EPA 8270C	mg/kg	ND	ND	2.5	ND
	benzo (b) fluoranthene	EPA 8270C	mg/kg	ND	ND	3.1	ND
	benzo (g,h,i) perylene	EPA 8270C	mg/kg	ND	ND	1.2	ND
	benzo (k) fluoranthene	EPA 8270C	mg/kg	ND	ND	1.5	ND
	chrysene	EPA 8270C	mg/kg	ND	ND	5.3	ND
	dibenzofuran	EPA 8270C	mg/kg	ND	ND	0.65	ND
	fluoranthene	EPA 8270C	mg/kg	ND	ND	7.5	ND
	fluorene	EPA 8270C	mg/kg	ND	ND	12	ND
	deno (1,2,3-c,d) pyrene	EPA 8270C	mg/kg	ND	ND	1	ND
	2-methylnaphthalene	EPA 8270C	mg/kg	ND	ND	4.1	ND
	1-methylnaphthalene	EPA 8270C	mg/kg	ND	ND	3.1	ND
	3/4-methylphenol	EPA 8270C	mg/kg	ND	ND	1.6	ND
	naphthalene	EPA 8270C	mg/kg	ND	ND	15	ND
	phenanthrene	EPA 8270C	mg/kg	ND	ND	32	1.3
	pyrene	EPA 8270C	mg/kg	ND	ND	10	ND

mg/kg = miligrams per kilogram
ug/kg = micrograms per kilogram
mg/kg = miligrams per kilogram
ND = Analyte not detected

Metals - Air Sampling Analytical Results (Unvalidated)
outdoor air sample data
Fruitland Magnesium Incident
TDD: 02-1606001 / Site ID: A9AP

			mwf-metals-001	mwf-metals-002	mwf-metals-003	mwf-metals-004	mwf-metals-005	mwf-metals-006	mwf-metals-007	mwf-metals-008	MWF-METALS-009
											6/16/2016
Validated			Y	Y	Y	Y	Y	Y	Y	Y	N
Analyte	Method	Units	out	out	out	out	out	out	out	out	out
			u	d	c	c	u	d	c	c	d
Aluminum	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	0.992	1.25	1.69	0.345	**1.22**
Antimony	NIOSH 7303M	ug/m3	ND<0.25	5.43	ND<0.25	ND<0.25	0.412	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Arsenic	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Barium	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	0.579	ND<0.25	0.946	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Beryllium	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Cadmium	NIOSH 7303M	ug/m3	ND<0.25	3.94	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Calcium	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	5.55	4.98	5.49	8.08	2.69	**8.42**
Chromium	NIOSH 7303M	ug/m3	1.53	2.00	8.76	1.42	ND<0.25	ND<0.25	ND<0.25	0.646	ND<0.25
Chromium, Validated Results			#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	ND<0.25
Cobalt	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Copper	NIOSH 7303M	ug/m3	ND<0.25	13.5	ND<0.25	ND<0.25	7.27	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Iron	NIOSH 7303M	ug/m3	3.14	ND<0.25	ND<0.25	ND<0.25	5.66	0.895	4.10	ND<0.25	**1.50**
Lead	NIOSH 7303M	ug/m3	ND<0.25	2.46	ND<0.25	ND<0.25	0.792	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Magnesium	NIOSH 7303M	ug/m3	1.16	2.70	6.23	1.36	18.9	2.47	2.11	0.386	**7.91**
Manganese	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Molybdenum	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Nickel	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Potassium	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	7.43	0.432	0.887	ND<0.25	ND<0.25
Selenium	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Sodium	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	5.82	7.01	8.44	2.41	**3.80**
Thallium	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Vanadium	NIOSH 7303M	ug/m3	0.399	0.405	1.81	0.327	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Zinc	NIOSH 7303M	ug/m3	ND<0.25	6.25	ND<0.25	0.423	6.52	ND<0.25	0.307	ND<0.25	**0.295**

Notes:
ug/m3 = micrograms per cubic meter
ND = Analyte not detected

u = upwind c=crosswind
d=downwind

Weston Solutions, Inc. 2016

Metals - Air Sampling Analytical Results (Unva
outdoor air sample data
Fruitland Magnesium Incident
TDD: 02-1606001 / Site ID: A9AP

			MWF-METALS-010	MWF-METALS-021	MWF-METALS-022	MWF-METALS-031	MWF-METALS-032	MWF-METALS-034	MWF-METALS-035	MWF-METALS-068	MWF-METALS-069
			6/16/2016	6/16/2016	6/16/2016	6/16/2016	6/16/2016	6/16/2016	6/16/2016	6/23/2016	6/23/2016
Validated			N	N	N	N	N	N	N	N	N
Analyte	Method	Units	out	out	out	out	out	out	out	out	out
			u	u	d	d	u	u	d	u	d
Aluminum	NIOSH 7303M	ug/m3	**0.643**	**0.927**	**1.33**	**1.02**	**0.692**	**0.649**	**0.539**	**0.334**	**0.497**
Antimony	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Arsenic	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Barium	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	**0.426**	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Beryllium	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Cadmium	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Calcium	NIOSH 7303M	ug/m3	**7.53**	**8.35**	**5.69**	**1.62**	**1.05**	**2.68**	**1.72**	**1.73**	**2.12**
Chromium	NIOSH 7303M	ug/m3	ND<0.25	**0.323**	ND<0.25	**0.910**	**0.681**	**0.476**	**0.437**	ND<0.25	ND<0.25
Chromium, Validated Results			ND<0.25	0.323	ND<0.25	0.445	ND<0.25	ND<0.25	ND<0.25	#N/A	#N/A
Cobalt	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Copper	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Iron	NIOSH 7303M	ug/m3	**0.506**	**1.10**	**1.53**	**1.85**	**0.616**	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Lead	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Magnesium	NIOSH 7303M	ug/m3	**0.644**	**0.476**	**2.35**	**2.62**	**0.810**	**0.760**	**0.690**	**0.467**	**0.626**
Manganese	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	**0.271**	ND<0.25	**1.49**	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Molybdenum	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Nickel	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Potassium	NIOSH 7303M	ug/m3	ND<0.25	**1.24**	**1.07**	ND<0.25	**1.38**	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Selenium	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Sodium	NIOSH 7303M	ug/m3	**3.71**	**4.79**	**4.60**	**3.58**	**3.30**	**2.02**	**1.86**	**1.91**	**2.20**
Thallium	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Vanadium	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Zinc	NIOSH 7303M	ug/m3	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25

Notes:
ug/m3 = micrograms per cubic meter
ND = Analyte not detected

bcc: Site File
Michelle Rogow, SFD-9-2
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Confidential Enforcement Addendum